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INTERSTATE COMMERCE COMMISSION
BUREAU OF SAFETY

SUMMARY OF ACCIDENT INVESTIGATION REPORTS

No. 60

April, May, and June
1934

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ACCIDENT REPORTS ACT

An Act Requiring common carriers engaged in interstate and foreign commerce to make full report of all accidents to the Interstate Commerce Commission, and authorizing Investigations thereof by said commission.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That it shall be the duty of the general manager, superintendent, or other proper officer of every common carrier engaged in interstate or foreign commerce by railroad to make to the Interstate Commerce Commission, at its office in Washington, District of Columbia, a monthly report, under oath, of all collisions, derailments, or other accidents resulting in injury to persons, equipment, or roadbed arising from the operation of such railroad under such rules and regulations as may be prescribed by the said commission, which report shall state the nature and causes thereof and the circumstances connected therewith: *Provided*, That hereafter all said carriers shall be relieved from the duty of reporting accidents in their annual financial and operating reports made to the commission.

SEC. 2. That any common carrier failing to make such report within thirty days after the end of any month shall be deemed guilty of a misdemeanor, and upon conviction thereof by a court of competent jurisdiction shall be punished by a fine of not more than one hundred dollars for each and every offense and for every day during which it shall fail to make such report after the time herein specified for making the same.

SEC. 3. That the Interstate Commerce Commission shall have authority to investigate all collisions, derailments, or other accidents resulting in serious injury to persons or to the property of a railroad occurring on the line of any common carrier engaged in interstate or foreign commerce by railroad. The commission, or any impartial investigator thereunto authorized by said commission, shall have authority to investigate such collisions, derailments, or other accidents aforesaid, and all the attending facts, conditions, and circumstances, and for that purpose may subpœna witnesses, administer oaths, take testimony, and require the production of books, papers, orders, memoranda, exhibits, and other evidence, and shall be provided by said carriers with all reasonable facilities: *Provided*, That when such accident is investigated by a commission of the State in which it occurred the Interstate Commerce Commission shall, if convenient, make any investigation it may have previously determined upon, at the same time as, and in connection with, the State commission investigation. Said commission shall, when it deems it to the public interest, make reports of such investigation, stating the cause of accident, together with such recommendations as it deems proper. Such reports shall be made public in such manner as the commission deems proper.

SEC. 4. That neither said report nor any report of said investigation nor any part thereof shall be admitted as evidence or used for any purpose in any suit or action for damages growing out of any matter mentioned in said report or investigation.

SEC. 5. That the Interstate Commerce Commission is authorized to prescribe for such common carriers a method and form for making the reports hereinbefore provided.

SEC. 6. That the act entitled "An act requiring common carriers engaged in interstate commerce to make full reports of all accidents to the Interstate Commerce Commission," approved March 3, 1901, is hereby repealed.

SEC. 7. That the term "interstate commerce" as used in this act shall include transportation from any State or Territory or the District of Columbia to any other State or Territory or the District of Columbia, and the term "foreign commerce" as used in this act shall include transportation from any State or Territory or the District of Columbia to any foreign country and from any foreign country to any State or Territory or the District of Columbia.

SEC. 8. That this act shall take effect 60 days after its passage.

Public, No. 165, approved May 6, 1910.

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SUMMARY OF ACCIDENT-INVESTIGATION REPORTS NO. 60, APRIL, MAY, AND JUNE 1934

INTERSTATE COMMERCE COMMISSION, BUREAU OF SAFETY

The following is a summary of reports made to the Interstate Commerce Commission by the Director of the Bureau of Safety covering accident investigations which were completed during the quarter ended June 30, 1934.

The statements in these reports of the number of persons killed and injured in the accidents investigated are the figures obtained at the time of the investigation of the accidents.

CHICAGO, ST. PAUL, MINNEAPOLIS & OMAHA RAILWAY

Derailment of a freight train near Northline, Wis., on April 3, 1934, which resulted in the death of three employees.

This accident was caused by a washout.

In the vicinity of the point of accident this was a double-track line over which trains were operated by time table, train orders, and an automatic block-signal system. The accident occurred at a point approximately 1.4 miles west of the station; approaching this point from the east, there were several short tangents and curves, followed by 1,271 feet of tangent track, the accident occurring on this tangent at a point approximately 300 feet from its eastern end. The grade for west-bound trains was 1.286 percent descending at the point of accident.

The track was laid with 100-pound rails, 33 feet in length, with an average of 18 ties to the rail length, fully tieplated, and ballasted with slag to a depth of about 12 inches. The track was well maintained.

In the vicinity of the point of accident the track was laid on a shelf on the side of a ridge of hills which rose on the south to a height of 100 feet or more above the level of the track; immediately east of the point of accident, however, the track ran through a cut in a projecting point of the ridge. The north side of this cut was about 20 feet in height, while the south side rose quite abruptly to a height of about 25 feet above the level of the track and then met the natural slope of the hill through which the cut passed. On the slope of this hill just above and near the middle of the cut, at a point approximately 400 feet east of the point of accident, two

channels formed by drainage from the hills converged and the water concentrated at this point had in times past washed out quite a large cavity in the south side of the cut; in order to control the eroding effect of water passing through this cavity considerable riprap had been provided.

During the night of April 2 there had been a steady rain, and it was dark and raining steadily at the time of the accident, which occurred about 2:45 a. m.

West-bound second-class freight Train No. 89 consisted of 44 cars and a caboose, hauled by engine 414, and upon arrival at Northline, engine 491 was coupled ahead of engine 414. This train departed from Northline at 2:40 a. m., and had gone about 1.4 miles when it was derailed while traveling at a speed estimated to have been between 15 and 20 miles per hour.

Engine 491 and its tender were partially derailed, and the second engine turned over on its right side down an embankment on the right side of the track beyond the point of derailment, its tender becoming separated and stopping beside the engine; 12 cars were piled in a heap within a distance of a few hundred feet. The employees killed were the engineman and fireman of the second engine, and the head brakeman.

The evidence indicated that during the night there had been a heavy rain, causing a rush of water down the gully on the south side of the cut at a point about 400 feet east of the point of accident; gravel was washed upon the tracks, damming up the ditch along the south side and causing the water to overflow to the ditch along the north side of the tracks; the water then cut away a large portion of the north bank of the cut and undermined the west-bound track just beyond the end of the cut.

ST. LOUIS-SAN FRANCISCO RAILWAY

Derailment of a passenger train at Dora, Ala., on April 5, 1934, which resulted in the death of 1 employee and the injury of 2 employees.

This accident was caused by a bolt having been placed on the high rail of a curve.

In the vicinity of the point of accident this was a single-track line over which trains were operated by time table, train orders, and an automatic block-signal system. The initial point of derailment was approximately 258 feet north of the north passing-track switch, while the final point of derailment was at the frog of this switch, a facing-point switch for south-bound trains located about 528 feet north of the depot. Approaching from the north there were numerous short tangents and curves, followed by 923 feet of tangent track, and then a 6° curve to the right 618 feet in length,

including spirals, the initial point of derailment being on this curve 232 feet from its northern end. The grade for south-bound trains was 1.25 percent ascending at the point of accident.

The track was laid with 100-pound rails, 39 feet in length, with an average of 24 treated ties to the rail length, fully tieplated, and having about 6 spikes to the tie, ballasted with slag to a depth of from 12 to 20 inches, topped with chats. The track was well maintained. The superelevation of the outside rail of the curve was 4 inches.

The weather was clear at the time of the accident, which occurred about 3:05 p. m.

South-bound passenger Train No. 105 consisted of 1 mail car, 1 baggage car, 1 combination baggage-coach, 2 coaches, 2 Pullman sleeping cars, and 1 dining car, in the order named, all of steel construction, hauled by engine 1526. This train passed Cordova, the last open office, 5.9 miles north of Dora, at 2:56 p. m., according to the train sheet, 9 minutes late, and was derailed while approaching Dora at a speed estimated to have been between 30 and 40 miles per hour.

Engine 1526, its tender, the first three cars, and the forward truck of the fourth car were derailed. The engine stopped on its right side about 350 feet south of the point of the switch; the tender also was on its side, opposite the engine, but the cars remained upright. The employee killed was the engineman, while the employees injured were the fireman and baggageman.

The evidence indicated that a small bolt had been placed on the rail on the outside of the curve and that it caused the engine truck to become derailed when the engine ran over it, the engine continuing with only the truck derailed until it encountered the north switch of the passing track, a facing-point switch for south-bound trains, the final derailment occurring at the frog of this switch. A signal maintainer had been working in the immediate vicinity practically all day and had not observed anyone loitering around the track, and a freight train had passed about 1½ hours previously. It further appeared from the maintainer's statements, however, that shortly before the accident occurred a number of school children had been crossing the track and it was possible that one of them placed the bolt on the rail. The bolt was similar to those used in carrier irons on freight cars, and while it was rusty, the flattened or mashed part of it was bright, indicating that it had recently been run over.

NORTHERN PACIFIC RAILWAY

Derailment of a passenger train near Big Lake, Wash., on April 6, 1934, which resulted in the death of 1 employee and the injury of 1 employee and 1 mail clerk.

It was believed that this accident was due to a combination of several factors, including irregular track surface, speed, and distribution of the tender load which caused the tender to rock sufficiently to derail the rear truck.

In the vicinity of the point of accident this was a single-track line over which trains were operated by time table and train orders, no block-signal system being in use. The initial point of derailment was approximately 1.3 miles west of Big Lake, while the final derailment occurred at the switch leading to Tiloh Spur, one-half mile farther east. Approaching the initial point of derailment from the east, the track was tangent for a distance of 2,754 feet, followed by a 0°30′ curve to the left 833 feet in length and then tangent track for a distance of 3,896 feet, the initial point of derailment being on this latter tangent at a point 758 feet from its eastern end; this was at the leaving end of a vertical curve 800 feet in length, which was followed by a slight ascending grade to the spur track.

In the vicinity of the initial point of derailment the track was on a fill about 4 feet in height and at the time of the accident there was about 1 foot of water on the south side of this fill, the nearest culvert being about 2,200 feet to the west. The track was laid with 90-pound rails, 33 feet in length, with an average of 18 or 19 fir ties to the rail length, about 50 percent being treated ties; it was fully tieplated and single-spiked and 4 rail anchors to the rail length were used. The track was ballasted with gravel to a depth of about 12 inches.

Speed restrictions through this territory had been 60 miles per hour for passenger trains and 45 miles per hour for freight trains, but on August 10, 1933, special bulletin instructions were issued restricting the speed for passenger trains to 50 miles and for freight trains to 40 miles per hour.

Tiloh Spur was an industrial track, the switch being a facing-point switch for west-bound trains, and at the time of the accident there were four box cars standing on this spur just clear of the main track. Opposite the spur track the main track was laid on a fill about 12 feet in height.

The weather was clear at the time of the accident which occurred about 11:20 a. m.

West-bound passenger Train No. 443 consisted of 1 mail and baggage car, 3 coaches, and 1 baggage car, in the order named, hauled by engine 2198. The baggage cars were of all-steel construction while the coaches were of wooden construction. This train left Arlington, the last open office, 17.6 miles east of Big Lake, at 10:48 a. m., according to the train sheet, 1 minute late, and on approaching Tiloh

Spur was derailed while traveling at a speed estimated to have been between 30 and 45 miles per hour.

The rear tender-truck wheels were derailed to the right and followed the rails until they encountered the spur-track switch, a distance of approximately 2,630 feet. The engine remained on the track and stopped at a point 694 feet beyond the switch, while the tender remained coupled to the engine with the front truck derailed to the left, the rear tender truck having become detached and stopping to the right of the main track 187 feet behind the tender. The first three cars stopped on their right sides at the foot of the fill between the main and spur tracks; the fourth car was tipped to the right down the embankment while the last car was leaning against a box car on the spur track, with its front wheels derailed. The employee killed was the conductor.

The track surface was found to be uneven, the left rail being 1 inch high at a point 234 feet east of the point of derailment, while the ties under the joint near the point of derailment were badly decayed. At the time of the accident the tender had about 1 foot of water or about 1,800 gallons, and approximately 8 tons of coal. Owing to the comparatively short wheel base the center of gravity of the tender was quite high and the greater portion of the weight being in the forward end, its center of gravity was raised accordingly and the greater part of the weight was being carried on the front trucks. The intermittent flange marks on the ties when the wheels were first derailed indicated that there must have been a severe rolling action of the tender just prior to the derailment, which evidently was intensified at the joint where two old and decayed ties were found in the track, and it was thought that the condition of this joint had a material effect in rocking the rear wheels of the tender off the track.

BALTIMORE & OHIO AND PENNSYLVANIA RAILROADS

Head-end collision between a Baltimore & Ohio freight train and a Pennsylvania freight train on joint track of the two roads near Kylesburg, Ohio, on April 19, 1934, which resulted in the death of 1 employee and the injury of 3 employees.

This accident was caused by the failure of an operator to display the train-order signal and to deliver a hold order to the crew of extra 6706, and by his further error in lining up the route and displaying signal indications admitting this train to a block which he had pledged to and which was occupied by an opposing train.

This was for the most part a double-track line, but between Outville, 5 miles west, and Heath, 2.6 miles east, of Kylesburg, there was a third track known as the "west-bound running track" which was used principally by west-bound freight trains; when running with the current of traffic, trains were operated by time table and an

automatic block-signal system, a cab-signal system also being in operation on Pennsylvania engines; trains running against the current of traffic were operated by train orders and a manual block-signal system. The accident occurred on track 3, the west-bound running track, at a point about 1 mile west of Kylesburg or 1,183 feet west of signal bridge 111.1F; approaching this point from the west, the track was tangent for a distance of 4,617 feet, followed by a 1° curve to the right 1,841 feet in length, the accident occurring on this curve at a point 584 feet from its western end. Approaching from the east, there was approximately 1 mile of tangent, followed by the curve on which the accident occurred. The grade for west-bound trains was 0.84 percent ascending at the point of accident.

The automatic signals were of the position-light type, located on signal bridges spanning the tracks. Pennsylvania engine 6706, which was involved in this accident, was equipped with cab signals which functioned when running forward with the current of traffic but not when running backward. Under special instructions contained in the time table, engines backing up were limited to a speed of 15 miles per hour, while freight trains operating over track 3 were limited to a speed of 25 miles per hour.

The weather was clear at the time of the accident, which occurred about 5:45 p. m.

East-bound Baltimore & Ohio freight train Extra 2765 consisted of 53 cars and a caboose, hauled by engine 2765. At Outville the crew received train order 243, form 19, authorizing them to run against the current of traffic on track 3; this order read as follows:

B. & O. extra 2765 east has right over opposing trains on westward no. 3 track, Outville to Heath. Westward trains get this order at Heath.

While approaching Kylesburg, the opposing train was observed approaching, but owing to the curve it was not known upon which track it was traveling until the trains were only a short distance apart; the engineman then applied the air brakes in emergency, following which his train collided with Extra 6706 while traveling at a speed estimated to have been about 25 miles per hour.

West-bound Pennsylvania freight train Extra 6706 consisted of engine 6706, which was being operated backwards, nine cars and caboose. The cars were picked up at Heath and at 5:30 p. m., according to the train sheet, the train left that point, with the caboose being pushed ahead of the engine, without a copy of train order 243, previously quoted. On arrival at Kylesburg, a closed office, the caboose was switched back to the rear of the train, and Extra 6706 departed from that point about 5:41 p. m. Approaching signal bridge 111.1F the automatic signal was observed to be dis-

playing a clear indication, and as the engine passed under the bridge at a speed estimated to have been between 12 and 15 miles per hour the indication changed to stop, the engineman assuming that this was caused by the tender passing the signal; shortly afterwards the opposing train was observed approaching, and when it was realized that both trains were on the same track the engineman applied the air brakes in emergency and his train either had stopped or was barely moving when it was struck by Extra 2765.

The tender of engine 6706 was derailed and badly damaged, while the tender of engine 2765 was practically destroyed and nine empty tank cars immediately behind it were derailed, blocking tracks 1 and 2, while the thirty-eighth car, a box car, collapsed. The employee killed was the head brakeman of Extra 2765; the employees injured were the engineman and fireman of that train and the fireman of Extra 6706.

The operator claimed that he had been under the impression that the train-order signal should have been displayed only for track 1, the west-bound main track, and for that reason he did not display the signal when he had a hold order for west-bound trains on track 3, as he thought that in the event it was displayed under such circumstances it might result in unnecessarily stopping a west-bound train on track 1, and that once a train-order signal was displayed it could not be taken down under any consideration until the order was completed; the rules, however, provided that an operator could not clear the signals for an approaching train unless he knew the train was not the one to which orders were addressed. He said that movements similar to those involved in this case were frequently made, but that the hold order would not be delivered to the west-bound train involved; that train, being controlled by signal indications, would not be permitted to proceed until the order was fulfilled by the east-bound train, and annulled by the dispatcher and the block clear. When Extra 6706 was ready to depart, however, the operator forgot the order, which was lying on his table.

A safety device, known as a "keeper" or "reminder", was provided and required by the rules to be used on the lever of the interlocking machine to preclude the possibility of a conflicting movement being authorized after the block had been pledged. In this instance, however, the operator removed the reminder from lever 3 in order to arrange for another train movement at Heath, and then he forgot to replace it; overlooking the fact that he had pledged the block to the east-bound train, he then lined the route for the west-bound train and permitted it to enter the occupied block without having delivered a copy of the hold order or having displayed the train-order signal.

LEHIGH VALLEY RAILROAD

Derailment of a freight train at Bowmanstown, Pa., on April 24, 1934, which resulted in the death of 1 employee and the injury of 4 employees.

This accident was caused by excessive speed on a sharp curve.

In the vicinity of the point of accident this was a double-track line over which trains were operated by time table, train orders, and an automatic block-signal and train-stop system, the latter being of the intermittent-inductive type. A storage track paralleled the main tracks on the south, the tracks being numbered, from north to south, 1, 2, and 4; the accident occurred on track 2 at a point 1,720 feet west of the station at Bowmanstown; approaching this point from the west, the track was tangent for a distance of approximately 1,275 feet, followed by a 5° curve to the right 443 feet in length, tangent track for a distance of 60 feet, and then a 7°37′ curve to the left 1,053 feet in length, the accident occurring on this last-mentioned curve at a point 283 feet from its western end, or 163 feet from the leaving end of the spiral. The grade was slightly descending for east-bound trains, being 0.28 percent at the point of accident.

The track was laid with 136-pound rails, 39 feet in length, with an average of 24 ties to the rail length, fully tieplated, and was ballasted with crushed stone; the track was well maintained. The speed of trains on the curve on which the accident occurred was restricted to 40 miles per hour, speed-limit signs being located along the right-of-way just west of the 5° curve and also on the 7°37′ curve just east of its western end.

The weather was clear at the time of the accident, which occurred about 2:48 a. m.

East-bound freight train BNY–2 consisted of three cars and a caboose, hauled by passenger engine 2020. This train departed from Packerton, 5 miles west of Bowmanstown, at 2:42 a. m., passed Lehighton, 1.6 miles beyond, at 2:44 a. m., and was approaching Bowmanstown when it was derailed while traveling at a speed estimated to have been between 45 and 60 miles per hour.

The entire train was derailed, the engine and tender being overturned on their right sides with the rear end of the engine on track 4 and the forward end against an embankment on the south side of the tracks, 252 feet east of the point of derailment. One of the cars went down the embankment to the left and stopped in an upright position in the Lehigh River approximately 180 feet beyond the engine. The other two cars were practically upright and diagonally across the tracks opposite the engine, with the caboose upright and against the rear of the engine. All of this equipment was badly damaged. A string of empty hopper cars was standing on track 4,

and the derailed train scraped the sides of 2 of these cars, slightly damaging them, and then derailed and destroyed the following 7 hopper cars. The employee killed was the engineman, and the employees injured were the fireman, conductor, brakeman, and flagman.

None of the surviving employees appeared to have been paying particular attention to the speed, although the conductor later said that the speed might have been in excess of 50 miles per hour after passing Lehighton, and the brakeman said that it could have been 60 miles or more per hour at the time of the accident. The best evidence, however, to indicate that the speed was excessive was that which was obtained from examination of the track and equipment. This examination failed to disclose any defective condition that could have contributed to the cause of the accident, but it did reveal that the only marks on the track at the point of derailment were on the high or outside rail of the curve and on the outer ends of the ties east of this mark. There were no marks of any kind on the low rail, or between the rails, thus indicating conclusively that the engine turned over from centrifugal force without first being derailed; this would account for the marks near the tops of two coal cars standing on the storage track opposite the point of accident, while marks entirely around the circumference of wheels on the right side of the engine also indicated that the engine had been tilted sharply to one side while the wheels on that side still were on the rail.

The brakes had been inspected and tested before the train left Packerton, and a test of the brake apparatus removed from the engine subsequent to the accident disclosed that it was in working order, while the engineman appeared to have been in normal condition before starting the trip and must have been alive very shortly before the accident in view of the fact that the fireman observed him easing off on the throttle about 25 or 30 seconds before the accident occurred. Under these conditions it was impossible to say why he failed to reduce the speed of his train in compliance with the 40-mile-per-hour speed restriction in effect on this curve, although it was noted that this was only a 3-car freight train which was being hauled by a passenger-type engine and the engineman had received instructions to make as good time as possible consistent with safety.

LAKE SHORE ELECTRIC RAILWAY

Collision between an electric interurban freight train and a motor bus at Clyde, Ohio, on May 6, 1934, which resulted in the death of 2 passengers on the bus, and the injury of the bus driver, 1 student bus driver, 2 bus porters, and the motorman and conductor of the electric train.

This accident probably was caused by a blowout of the tire on the left front wheel of the bus.

In the vicinity of the point of accident this was a single-track electric line over which trains were operated by time table and train orders, no block-signal system being in use. The accident occurred within the corporate limits of Clyde, on State Street, 2,900 feet west of the station and 530 feet west of a regular stopping point for the bus involved in this accident; approaching this point from either direction the track was tangent for a considerable distance, and the grade was 0.3 percent descending for westbound trains.

State Street extended east and west and the railway track was laid in the center of the street, with the improved highway, which was known as U. S. Route 20, paralleling the track on either side at the point where the accident occurred. The highway proper was composed of macadam about 10 feet in width on each side of the track, outside of which there were well-settled shoulders from 7 to 10 feet wide, dressed with medium crushed stone and slag; the center strip upon which the car track was laid was about 10 feet in width and filled in between and along the outside of the rails with medium crushed rock and stone to the tops of the rails and was approximately level with the adjoining macadam surface of the highway.

The speed limit through Clyde for electric railway trains was 25 miles per hour, while highway vehicles were limited to a speed of 35 miles per hour.

The weather was clear and day was breaking at the time of the accident, which occurred about 4:15 a. m.

West-bound interurban freight train Extra 28 consisted of motor 28, of wooden construction, with an underframe reinforced with steel. On arrival at Clyde several bundles of Sunday newspapers were unloaded, the car departing from the station at 4:12 a. m., according to the train sheet, and it was proceeding westward on State Street at a speed estimated to have been about 18 or 20 miles per hour when the left front corner was struck by the bus.

East-bound Great Eastern Stages, Inc., bus 135, was carrying passengers from Chicago, Ill., to Cleveland, Ohio, and points east; the body of the bus was of wooden construction, reinforced with thin-gage sheet steel. This bus left Toledo, Ohio, about 2:45 a. m., passed through Fremont, located about 32 miles beyond, about 3:45 a. m., and was proceeding eastward on State Street in Clyde at a speed estimated to have been about 15 miles per hour when it swerved suddenly to the left and collided with the electric car.

The entire left side of the bus was torn off, together with some of the seats on that side, and the top was ripped open, while the front

axle and steering gear were bent; the bus stopped on the opposite side of the street-car track with its front end against the corner of a culvert about 250 feet east of the point of impact. Motor car 28 was not derailed, but the left side of the front vestibule was torn off, the motor car stopping with its rear end about 125 feet west of where the collision occurred.

Examination of the tire in question showed evidence of a blow-out having occurred either before or at the time of the accident, and the condition of the tire and the marks on the roadway, as well as the damage sustained by the bus and the motor car, coupled with the statements of the bus driver and the motorman to the effect that the bus swerved suddenly into the motor car when it was only a few feet distant, led to the conclusion that the tire blew out and caused the bus to head directly toward the electric car, too late for either the bus driver or the motorman to prevent the accident. The reason for the blow-out was not determined; the bus had just passed over 2½ miles of very rough road, where the surface was being torn up and vehicles were moving only at their own risk, but no statement could be made as to whether the tire sustained damage on this rough road which subsequently caused it to blow out.

CHICAGO RIVER & INDIANA RAILROAD

Derailment of a yard engine and a cut of freight cars at Chicago, Ill., on May 19, 1934, which resulted in the death of 2 employees and the injury of 2 employees.

This accident was caused by insecure track.

This was a switching line over which movements were made under yard rules and special instructions, no time table, train orders, or block signals being in use. Within the yard in which this accident occurred there were five running tracks extending east and west through approximately the center of the yard, these tracks being designated from north to south as lead track 1, tracks 2, 3, and 4, and lead track 5. Lead track 5, on which the accident occurred, was used by trains, cars, or engines of various railroads moving in both directions in entering or leaving the stockyards. This track was tangent for practically its entire length of approximately 2,800 feet, the accident occurring at a point near the center of this tangent. The grade was level at the point of accident.

The track was laid with 105-pound rails, 33 feet in length, with 20 ties to the rail length. and was ballasted with cinders to a depth of about 3 feet.

Special instructions required all trains and engines to move at restricted speed prepared to stop short of train, obstruction, or anything that might require the speed of the train to be reduced.

The weather was clear and hot, with a temperature of 92° at the time of the accident, which occurred about 12:35 p. m.

Engine 360, east-bound, with a caboose and 21 cars, in the order given, entered the western end of lead track 5 and had proceeded about half way through the yard when it was derailed while traveling at a speed estimated to have been about 15 miles per hour.

The engine was derailed to the left and stopped on its left side, while the tender remained coupled to the engine, leaning at an angle of about 45°. The caboose and the first five cars also were derailed, the caboose being demolished. The engineman and fireman were killed and the conductor and a brakeman were injured.

On the morning of the accident the section gang had been renewing ties; the section foreman said he had put in 38 ties, some of which had been left unspiked while he and his men went to lunch, but about 30 minutes after the accident the assistant roadmaster found 36 ties not spiked out of a total of 75 successive ties. In addition, the track had been materially weakened by the removal and refilling of ballast where the ties had been renewed, and this fact, coupled with the failure of the section foreman to spike the ties, was believed to be adequate to account for the occurrence of the accident. Flag protection had been provided while the men were at work, being removed during the lunch period; in view of the uncompleted condition of the work this track should not have been left unprotected.

NORFOLK & WESTERN RAILWAY

Derailment of a freight train near Nace, Va., on May 20, 1934, which resulted in the death of 1 employee and the injury of 1 employee.

The cause of this accident was not definitely determined.

In the vicinity of the point of accident this was a single-track line over which trains were operated by time table, train orders, and an automatic block and cab-signal system. The accident occurred approximately three-fourths of a mile south of the station at Nace; approaching this point from the north, there was a 7° curve to the left 382 feet in length and then the track was tangent for a distance of 1,315 feet, followed by a 5°30′ curve to the left 1,147 feet in length, the accident occurring on this last-mentioned curve at a point 272 feet from its northern end. The grade for south-bound trains was descending for a distance of 900 feet, ranging from 1.05 percent to 1.20 percent, leading to a vertical curve, and then it was 0.74 percent ascending for a distance of 1,127 feet to the point of accident, and for some distance beyond that point.

The track was laid with 130-pound rails, 39 feet in length, with an average of 24 hardwood ties to the rail length, fully tieplated.

single-spiked, equipped with from 1 to 5 rail anchors to the rail length, and was ballasted with crushed stone to a depth of about 8 inches, underlaid with slag. The track had been raised recently but no ballast had been added, the result being that there was no ballast between some of the ties while in other cases it varied up to about 4 inches above the bottoms of the ties; the ballast under the ties, however, was firm. The maximum speed permitted for freight trains was 45 miles per hour.

The weather was clear and hot at the time of the accident, which occurred about 2:50 p. m.

Southbound freight train Extra 2012 consisted of 5 loaded and 70 empty cars, and a caboose, hauled by engine 2012, of the 2–8–8–2 type. This train left Waynesboro, 81.5 miles north of Nace, at 11:30 a. m., passed Lithia, 5.4 miles from Nace, at 2:31 p. m., and was derailed shortly afterward while traveling at an estimated speed of from 25 to 30 miles per hour.

The engine and tender were derailed and stopped on their left sides against the embankment to the left of and parallel with the track, with the front end of the engine 360 feet south of the point of derailment. The first car and the fifth to the twelfth cars, inclusive, also were derailed, the first car stopping immediately behind the tender and the other derailed cars being scattered in various positions. The engine was badly damaged, one car was destroyed, and the other cars were more or less badly damaged. The employee killed was the engineman, and the employees injured were the fireman and the head brakeman.

The statements of the section foreman and roadmaster were to the effect that the track was left in good condition after having been raised 3 weeks prior to the accident, and it had been inspected by the section foreman the day preceding the accident, while the last train to pass over it was south-bound passenger Train No. 1, which passed Troutville, the next station south of the point of accident, at 8:04 a. m. An inspection of the track by the roadmaster and superintendent subsequent to the accident did not disclose anything which could have contributed to its occurrence, nor did the road foreman of engines, general foreman, or assistant to the superintendent of motive power discover any mechanical defect about the engine that could have contributed to its derailment. A careful inspection of the track and engine by the Commission's inspectors also revealed no defects that might have caused the accident.

The temperature on the day of the accident was about 90° and consideration was given to the possibility that the track might have buckled due to this warm weather, when coupled with the fact that additional ballast had not been added when the track was

raised. It was not definitely determined that this was the case, however, nor did it appear that there was any question as to excessive speed, and examination of the marks on the rails, the absence of marks on the ties, and the manner in which the track was found to be out of line, first several inches to the left or inside of the curve, then several feet to the right for a short distance, and then several feet to the left for a considerable distance, coupled with marks which indicated that the right front driver of the low-pressure engine had been running on the outside of the rail with the left back driver on the inside, without marking either ties, rail bases, or spikes, failed to lead to any definite conclusion as to the cause of the accident. The train crew had no warning of anything wrong prior to the derailment, and it was apparent that evidence as to the cause of accident was destroyed as a result of damage to the engine and track following the derailment.

VIRGINIAN RAILWAY

Head-end collision between two freight trains at Cirtsville, W. Va., on May 22, 1934, which resulted in the death of 2 employees and the injury of 1 employee.

This accident was caused by failure to obey a meet order.

In the vicinity of the point of accident this was a single-track line over which trains were operated by time table and train orders, no form of block-signal system being in use. The passing track at Cirtsville was 3,722 feet in length, paralleling the main track on the north, and the accident occurred at a point approximately 1,446 feet east of the east switch of this passing track. Approaching the point of accident from the west, there was a series of short curves and tangents, followed by a 7° curve to the right 992 feet in length, tangent track for a distance of 577 feet, and a compound curve to the left 1,845 feet in length, the curvature varying from 2°56′ to 4°48′, the accident occurring on this compound curve at a point about 641 feet from its western end where the curvature was 3°25′. Approaching from the east, the track was tangent for 582 feet followed by the compound curve on which the accident occurred. The grade for east-bound trains was ascending, it being 1.49 percent at the point of accident.

The view had by the engineman of an east-bound train approaching the point of accident was restricted to less than 300 feet, while the engineman of a west-bound train could not see the point of accident for a distance of more than 600 feet.

The weather was cloudy at the time of the accident, which occurred at 4:27 p. m.

East-bound freight train Extra 718 consisted of engine 718, 69 cars, helper engines 729 and 716, and a caboose, in the order named. At Page, their initial terminal, 20.7 miles west of Cirtsville, the crew received copy of train order 41, form 19, directing them to run extra from Page to Gulf Junction and to meet two trains not involved in this accident. The train departed from Page at 1:22 p. m., according to the train sheet, and at Oak Hill Junction, 9.1 miles beyond, the crew received train order 45, form 19, directing them to meet Extra 722 at Harper. Extra 718 departed at 2:35 p. m., after picking up 6 cars, and at Pax, the last open office, 3 miles west of Cirtsville, the crew received train order 48, form 19, changing the meet with Extra 722 to Cirtsville instead of Harper; there was no open office at Cirtsville. Eighteen additional cars had been picked up, and Extra 718 then consisted of 93 cars, helper engines 729 and 716, and a caboose. This train departed from Pax at 4:15 p. m., passed Cirtsville, and collided with Extra 722 while traveling at a speed estimated to have been between 15 and 20 miles per hour.

West-bound freight train Extra 722, consisting of 29 cars and a caboose, hauled by engine 722, departed from Gulf Junction, 29.6 miles east of Cirtsville, at 2:10 p. m., and at Slab Fork, 11.4 miles beyond, the crew received a copy of train order 48, previously mentioned. This train departed from Slab Fork at 2:56 p. m., and at Harper, the last telegraph office, 5.5 miles east of Cirtsville, the middle copy was received of the order fixing the meet with Extra 718 at Cirtsville instead of Harper. Additional cars had been picked up en route and on leaving Harper at 4:15 p. m. Extra 722 consisted of 33 cars and a caboose; it was approaching Cirtsville when it collided with Extra 718 while traveling at a speed estimated to have been between 6 and 10 miles per hour.

Engines 722 and 718 were badly damaged but remained upright, although engine 722 was partially derailed. Fourteen cars throughout Extra 718 were derailed and badly damaged, and the first four cars in Extra 722 were derailed and damaged. The engineman and head brakeman of Extra 718 were killed and the fireman of Extra 718 was injured.

Under the provisions of train order 48, Extra 718 was required to stop clear of the east switch of the passing track at Cirtsville and await the arrival of Extra 722. The meeting point with Extra 722 first had been fixed at Harper by train order 45, but at Pax, train order 48 was received changing the meet to Cirtsville. The conductor delivered the order to the fireman but had no understanding either with him or with the engineman as to the contents of this order, which restricted the rights of their train. The fireman read it and then handed it to the engineman, and it was apparent that

both the engineman and fireman misread the order and erroneously assumed that it was a middle order and that the meeting point at Harper was unchanged. It was the practice on this railway to allow the use of orders on form 19 when restricting the rights of a superior train; when such a practice is in effect, however, care must be taken to guard against mistakes which experience has shown may arise under the train-order method of operation. In this particular case the order changed the meeting point and was the most important order the crew had received, yet the conductor first and then the fireman and engineman passed it around without making sure that it was correctly read and understood.

PENNSYLVANIA RAILROAD

Derailment of a passenger train at Graystone, Md., on June 6, 1934, which resulted in the death of 1 passenger and 2 employees.

This accident was believed to have been due to excessive speed on a sharp curve.

This was a double-track line over which trains were operated by time table, train orders, and an automatic block and cab-signal system. The initial point of derailment was 225 feet east of bridge 27.12, and most of the derailed equipment stopped in the stream bed opposite the bridge. Approaching from the east, there was a 3° curve to the right 1,053 feet in length and then 390 feet of tangent, followed by an 8° curve to the left 1,004 feet in length, the initial point of derailment occurring on this curve at a point 378 feet from its eastern end. The grade was ascending for westbound trains, varying from 0.09 to 0.81 percent, and was 0.35 percent across the bridge.

Bridge 27.12, located approximately 250 feet east of the station at Graystone, was a steel bridge of the deck-girder, open-floor type, having stone masonry abutments and a concrete center pier; its total length between back walls was 80 feet 4 inches and the depth from the base of the rail of the west-bound track to the bed of the stream was 26 feet. The track was laid with 130-pound rails, 39 feet in length, with an average of 22 ties to the rail length, fully tieplated and spiked. The ballast was of trap rock, about 12 inches in depth, laid on a cinder subgrade. The track was well maintained. The superelevation of the outside rail on the 8° curve varied from 4¾ inches to 5⅜ inches, while the gage varied from 4 feet 8⅝ inches to 4 feet 9 inches. Both the high and low rails of the curve showed fairly equal distribution of wear, and there was only slight flange wear on the high or outside rail. The speed limit for passenger trains in this territory was 55 miles per hour, while on the curve involved the speed was limited to 30 miles per hour.

The weather was clear at the time of the accident, which occurred about 8:18 p. m.

West-bound passenger train Extra 1387, consisted of 1 coach and 1 combination passenger and baggage car, both of all-steel construction, hauled by engine 1387, of the 4–6–2 type. This train left Cockeysville, 12.3 miles east of Graystone, at 8:02 p. m., stopped at Corbett, 7.4 miles beyond, to discharge a passenger, and was approaching Graystone when it was derailed while traveling at a speed estimated to have been at least 35 miles per hour.

Engine 1387, together with its tender and the coach, were derailed and plunged off the north side of bridge 27.12; the combination passenger and baggage car continued over the bridge and stopped upright on the roadbed 350 feet west of the initial point of derailment. The engine and tender were on their left sides in the stream bed and the coach was south of and opposite them, badly damaged. The employees killed were the engineman and fireman.

The investigation brought out considerable evidence that the train involved in this accident was being operated at an excessive rate of speed. The crossing watchman at McCullough Crossing stated that as the train approached and passed his crossing the engine was rocking far more than usual. Although this crossing was located only 430 feet east of the beginning of the curve on which the accident occurred, the statement of the crossing watchman indicated that the brakes were not applied until the rear end of the train had passed some distance beyond the crossing, and that a heavy application of the brakes was then made as he saw fire flying from the wheels. In addition, the engine, tender, and first car were thrown clear of the track, while the momentum of the third car carried it 350 feet beyond the initial point of derailment, notwithstanding that this car was derailed and the obstructions which it encountered en route set up considerable retardation. There was no evidence of dragging or otherwise defective equipment, and the track in both directions from the scene of the accident was substantially constructed and well maintained. It therefore appeared that the train approached the curve at relatively high speed and that the brakes were not applied soon enough properly to reduce its speed before entering upon the curve.

CHICAGO, ROCK ISLAND & PACIFIC RAILWAY

Side collision between a passenger train and a freight train at Pacific Junction, Okla., on June 11, 1934, which resulted in the death of one employee.

This accident was caused by failure of the conductor of the passenger train properly to control the speed of his train during a back-up movement.

This accident occurred on a single-track line over which trains were operated by time table and train orders, no block-signal system being in use. In the vicinity of the point of accident the general direction of this subdivision was north and south, but time-table directions were east and west and these latter directions were used in this report. There was a wye at Pacific Junction, the passenger cut-off forming the east leg, the wye track the west leg, and two tracks designated as the new main and the old main forming the north leg. The latter two tracks converged into the single-track main line a short distance west of the wye track, and the accident occurred within yard limits at the fouling point of these tracks 131 feet east of the junction switch. At a point 124.5 feet east of the main track or junction switch another track, known as the freight belt track, led off the old main, while 151 feet farther east the wye track led off the freight belt track to the right and connected with subdivision 48. Approaching the point of accident from either direction, the track was tangent for a long distance, followed by a 1° curve 2,268 feet in length which extended to the left for east-bound trains, and the accident occurred on this curve at a point 807 feet from its western end. The track was slightly descending in both directions toward the junction switch, but was level at the point of accident.

The switches involved were the junction switch, the freight belt switch, and the wye track switch. The switch stands were equipped with lamps mounted approximately 8 feet above the head-block ties; the junction switch lamp displayed a red indication when the switch was lined for a movement to the old main from the west and the other two switch lamps displayed green indications when the track was lined to the freight belt. All three stands were located on the engineman's side of an east-bound train moving toward the freight belt, while a clear view of the switch lights could ordinarily be had for a distance of approximately 1,460 feet from the leading car of a train backing westward on the new main track, but during such a movement the engineman's view of them would be materially restricted on account of the curvature and his position behind the train.

The weather was cloudy at the time of the accident, which occurred about 11:29 p. m.

Eastbound second-class freight Train No. 996 consisted of 68 freight cars, 1 passenger car, and a caboose, hauled by engine 2706. This train departed from Chickasha, 32.7 miles west of Pacific Junction, at 6:55 p. m., 40 minutes late, stopped at Pacific Junction about 11:20 p. m., 2 hours and 20 minutes late, and then proceeded to pull into the freight belt track at a speed of about 10 miles per hour, and it was while this movement was being made that the train was sideswiped by Train No. 44.

Eastbound passenger Train No. 44 consisted of 1 combination passenger coach and 1 baggage car, in the order named, being shoved by gas-electric motor 9000. This train left El Reno passenger station, 3,936 feet east of Pacific Junction, at 11:25 p. m., 10 minutes late, and was moving westward on the new main track, preparatory to heading eastward around the wye track and thence to its destination on subdivision 48, when it struck Train No. 996 while traveling at a speed estimated to have been between 6 and 10 miles per hour.

The left leading corner of the coach in the passenger train struck the forty-third car in the freight train, derailing the forward end of the coach to the right and crushing in its corner. The forty-third car was damaged but not derailed, while the forty-fourth car was derailed and badly damaged; none of the other equipment was derailed or damaged. The employee killed was the brakeman of Train No. 44.

Under special instructions contained in the time table, first-class trains approaching Pacific Junction were required to move at restricted speed expecting to find engines or trains turning on the wye. The rules defined restricted speed as proceeding prepared to stop short of a train, obstruction, or anything that required the speed of the train to be reduced. The rules further provided that a signal improperly displayed, or the absence of a signal at a place where a signal was usually shown, should be regarded as the most restrictive indication that could be given by that signal.

According to the statements of the conductor of the passenger train it was so dark that visibility was materially restricted and he did not see the cars of Train No. 996 until his train collided with them, although he had previously given the engineman a slow signal and the speed had been reduced to some extent. His first intimation that the track was occupied was when the brakeman shouted a warning very shortly before the collision occurred and he immediately applied the brakes in emergency with the tail hose valve, but it was then too late to prevent the accident. He had seen two green switch lights which appeared to be flickering, but thought this was caused by wind getting under the bottoms of the lamps, and it did not occur to him that the intermittent display of these lights might be caused by passing cars. Tests conducted subsequent to the accident, however, revealed that these switch lights could not be seen from a train approaching from the east while a train was entering the freight belt track except when a low car passed them, and if the conductor had seen these lights only at intervals he should have realized that something was wrong and should have brought his train either to a stop or under such control that he could definitely ascertain what caused this unusual condition before it was too late to avert the accident.

ELGIN, JOLIET & EASTERN RAILWAY

Derailment of a freight train at Indiana Harbor, Ind., on June 26, 1934, which resulted in the death of 1 employee and the injury of 2 employees.

This accident was caused by a cocked or partly opened switch.

This was a double-track line over which movements were made under yard rules and special instructions, no time table, train orders, or block signals being in use. The accident occurred at the switch leading to the west lead to Buffington yards, this switch being located approximately 1,315 feet east of Michigan Avenue crossing; approaching this point from the west, there was a 2° curve to the right 525 feet in length, tangent track for a distance of 611 feet, and a 2° 30′ curve to the left 197 feet in length, followed by tangent track 3,987 feet in length, the accident occurring on this latter tangent at a point 1,465 feet from its western end. The grade was practically level at the point of accident.

The switch involved was a facing-point switch for east-bound trains, with a no. 10 turnout. The switch stand, located on the south side of the east-bound track, was a Star stand, manufactured by the Pettibone Mulliken Co., and was of the high revolving type with switch light roundels 6 feet 9 inches above the head block ties, displaying a green indication when the switch was lined for the main track and a red indication for the diverging route. The stand was equipped with a red fish-tail banner 12 by 30 inches which was 3 feet 4 inches above the head blocks; this banner was displayed only when the switch was lined for the diverging route. The view of the switch was unobstructed for over 1,400 feet.

Special time-table instructions provided that switch engines, engines running backward, and engines not equipped with pony trucks should not exceed a speed of 20 miles per hour.

The weather was clear at the time of the accident, which occurred at 6:30 p. m.

The east-bound transfer train, consisting of 64 loaded cars and a caboose, hauled by engine 336, of the 0–8–0 type, departed from South Chicago at 6 p. m., and on reaching the switch at the west end of Buffington yards it was derailed while traveling at a speed estimated to have been between 15 and 25 miles per hour.

The engine stopped at a point 225 feet beyond the switch, between the east-bound main and lead tracks, tipped to the left, with the tender across the two main tracks behind the engine. The first eight cars were derailed and stopped in various positions, badly damaged, between the tender and the switch. The employee killed was the engineman and those injured were the fireman and head brakeman.

The evidence indicated that the engineman saw the partly opened switch in time to apply the air brakes in emergency just before

reaching the switch, but prior to his death he stated that the red target was not displayed. Subsequent to the accident it was found that a small piece of the switch point was broken off, indicating that it had been struck by a driving wheel; the switch lock was open and hanging on the chain, the lever was out of its socket, and the target displayed a red indication.

A switchman in the crew of engine 577 who last used the switch, on the morning of the accident, stated that he bruised his hand in closing the lock, and after the accident it was found that it required force to snap the lock together. It was possible that the lock was not securely fastened when the switchman attempted to lock it, as subsequent to the investigation of this accident a statement was obtained from a 10-year-old boy in which he said he found the lock hanging on the chain and attempted to open the switch, but was unable to turn the lever entirely around, stating that he wanted to change the color of the switch light but was unable to do so.

NEW YORK, NEW HAVEN & HARTFORD RAILROAD

Head-end collision between a gas-electric rail car and a passenger train at Fall River, Mass., on June 30, 1934, which resulted in the injury of 6 passengers and 7 employees.

This accident was caused by the gas-electric car departing from the station on the main track instead of on another track designated in a clearance card and in verbal instructions received from the operator; also by the failure of the enginemen of both trains involved to move under proper control within yard limits.

In the vicinity of the point of accident this was a single-track line over which trains were operated by time table, train orders, and a manual block-signal system. The accident occurred within yard limits on the main track at a point about 4,640 feet south of the station at Fall River, just north of the viaduct at Anawan Street; approaching this point from the north, the track was tangent for a distance of about 300 feet, followed by a 5° curve to the right 443 feet in length, the accident occurring on this curve at a point about 55 feet from its northern end. The grade at the point of accident was 0.86 percent ascending for south-bound trains. Track 5 paralleled the main track on the west, and there was a cross-over connecting these tracks, extending from northeast to southwest, located about 550 feet north of the station.

The weather was clear at the time of the accident, which occurred about 1:10 p. m.

South-bound passenger Train No. 841 consisted of gas-electric rail car 9101. It arrived at Fall River, where its schedule terminated, at 1:03 p. m., on time and the passengers were discharged and the work of unloading mail, express, and baggage was performed. The

operator verbally instructed the conductor to make a back-up movement northward on the main track to the cross-over and then proceed southward on track 5 to the enginehouse, and he also delivered to the conductor two copies of a clearance card, form A, which gave authority to pass the train-order signal on track 5. Instead of backing northward to the cross-over, however, the gas-electric car departed southward on the main track and collided with Extra PX 827 while traveling at a speed estimated to have been about 15 miles per hour.

North-bound passenger train Extra PX 827 consisted of three cars, all of steel construction, hauled by engine 827. This train left Ferry Street station at 1:08 p. m., and had proceeded 1,795 feet beyond that point when it collided with gas-electric car 9101 while traveling at a speed estimated to have been between 10 and 15 miles per hour.

The force of the impact drove gas-electric car 9101 backward a distance of about 70 feet and crushed in its forward end; the front end of engine 827 was damaged. The employees injured were the engineman, fireman, and trainman of Extra PX 827, and the engineman, conductor, and baggagemaster of gas-electric car 9101, as well as an engine preparer who was deadheading on the rail car.

It appeared that on his arrival at Fall River station, the conductor of the gas-electric car went into the office and registered, and when he returned to the rail car he did not personally deliver a copy of the clearance card to the engineman, but merely indicated to the engineman that he had received it, and did not give the engineman the verbal instructions of the operator to make a backup movement to the cross-over and to use track 5 to the enginehouse. The engineman said that on returning to the rail car from the office the conductor said "all right down the main", while the conductor said that ordinarily the engineman asked whether it was "all right down the main" but did not remember having heard the engineman say anything of this nature on this occasion; the conductor apparently overlooked or forgot the clearance card and the verbal instructions of the operator. The clearance card designated the track to be used, and had the engineman secured or been given a copy of it the accident might have been averted.

Under the rules, extra trains were required to move within yard limits prepared to stop unless the main track was seen or known to be clear. On the arrival of extra PX 827 at Ferry Street station, the engineman was informed by the yardmaster that the crew of the rail car had been instructed to use track 5 from Fall River station to the enginehouse and to a certain extent the engineman relied upon this information for protection. This information, however, in no way relieved the engineman from complying with the requirements of the yard-limit rule; in fact, had both crews observed the yard-limit rule and moved prepared to stop, the accident would have been averted.

Accidents investigated during the year ended June 30, 1934

Date	Name of road	Location of accident	Kind of accident	Kind of trains involved	Persons		Method of operation (indicated by *)			Number of main tracks	Condition of weather	Time	Causes
					Killed	Injured	Block system: Automatic	Block system: Nonautomatic	Train-order system				
1933													
July 7	St. Louis-Southwestern of Texas.	Trinidad, Tex	Derailment	Freight	2	3			*	1	Clear	7:10 a. m.	Defective condition of side bearings of tank car.
10	Chicago, Rock Island & Pacific.	Billings, Okla	do	do	1	1			*	1	do	6:05 p. m.	Sun kink.
12	Wheeling & Lake Erie	Cleveland, Ohio	Collision, rear-end.	Switching movement and transfer train.	1	2			*	1	do	2:57 p. m.	Failure of engineman properly to control speed within yard limits and failure of flagman to provide proper flag protection.
21	Maine Central	Cornish, Maine	Collision, head-end.	Freight and light engine.	1	3			*	1	Rain	6:05 a. m.	Failure of engineman to know the correct time, resulting in failure to clear superior train in accordance with train order.
21	Chicago, Milwaukee, St. Paul & Pacific.	Gladwin, Iowa	Derailment	Freight	4			*		1	Clear	11 a. m.	Not definitely determined.
23	Delaware & Hudson	Avoca, Pa	do	do	2	9	*			2	do	3:11 p. m.	Not definitely determined but thought to have been dragging brake rigging.
24	New York, Ontario & Western.	Summitville, N.Y.	do	Passenger	1	2			*	1	do	2 p. m.	Motor truck driven upon crossing in front of approaching train.
25	Pennsylvania	Baltimore, Md	do	Freight		6	*			2	do	3:29 p. m.	False clear interlocking signal indication and failure of operator and leverman to take proper steps after warning devices indicated some part of plant was not functioning properly.
30	do	Altoona, Pa	do	Passenger	1	5	*(1)			4	do	9:47 p. m.	Not definitely determined, but thought to have been due to failure of some part of engine truck.
Aug. 3	Chicago & Eastern Illinois; Illinois Central.	Marion, Ill	Collision, side	Passenger and mixed.		2			*(3)	1	do	8:08 a. m.	Failure of Chicago & Eastern Illinois fireman to maintain proper lookout; failure of each engineman to approach crossing under full control.

See footnotes at end of table.

Accidents investigated during the year ended June 30, 1934—Continued

Date	Name of road	Location of accident	Kind of accident	Kind of trains involved	Persons		Method of operation (indicated by *)			Number of main tracks	Condition of weather	Time	Causes
					Killed	Injured	Block system: Automatic	Block system: Nonautomatic	Train-order system				
1933													
Aug. 9	Chicago, Burlington & Quincy.	Moseley, Colo.	Derailment	Passenger		24	*			1	Clear	11:25 a. m.	Broken head rod of switch.
12	Pennsylvania	Fruitland, Md.	do	do	4	6	*			2	Cloudy	1:20 a. m.	Rail joint disconnected account malicious tampering.
13	Spokane, Portland & Seattle.	Spearfish, Wash.	do	Freight	2	10			*	1	Clear	4:15 p. m.	Track buckled account heat.
14	Oregon-Washington Railroad & Navigation Co.	Attalia, Wash.	do	do	1	6	*			1	do	8:10 a. m.	Broken journal due to overheating.
21	New York Central	Angola, Ind.	Collision, head-end.	Freight and freight.		2		*		1	do	12:33 p. m.	Failure to deliver meet order.
24	Pennsylvania	Washington, D. C.	Derailment	Passenger	2	20	*(1)			2	Rain	3:26 a. m.	Center pier of bridge undermined by high water.
26	New York, Chicago & St. Louis.	Muncie, Ind.	Collision, head-end.	Rail-oiling train and transfer.	1	2			*	1	Clear	10:25 a. m.	Failure of company to make adequate provision for safe operation of rail-oiling train.
26	New York Central	Cedar Run, Pa.	Collision, rear-end.	Freight and freight.		1		*		1	Fog	6:14 a. m.	Failure of engineman properly to control speed in occupied block.
29	Southern Pacific	Hargis, N. Mex.	Derailment	Passenger	11	46	*			1	Rain	4:20 a. m.	Earth fill supporting bridge abutment undermined by high water.
Sept. 1	Erie	Westcolang, Pa.	Collision, head-end.	Gasoline motor cars.	2	5	*(3)			2	Clear	4:30 p. m.	Failure of operator to obey rules governing operation of motor cars in centralized traffic-control territory and to have definite understanding with extra gang foreman as to movement intended.
1	Baltimore & Ohio	Pleasant Valley, Ohio.	Derailment	Freight	4	5		*		1	do	6:15 p. m.	Burned-off journal.
5	Erie	Binghamton, N. Y.	Collision, rear-end.	Passenger and milk.	14	32	*(4)			2	do	7:23 p. m.	Failure of engineman properly to obey signal indications; contributing cause was failure to provide full flag protection.

	8	Virginian	Amigo, W. Va.	Collision, head-end.	Passenger and freight.	1	11			*	1	do	11:50 a.m.	Failure of engineman properly to contro speed approaching meeting point.
	11	Boston & Maine	West Concord, Mass.	Collision	Freight and freight.	1					(5)	do	8:15 a. m.	Failure properly to control back-up movement around wye.
	18	Denver & Salt Lake	Utah Junction, Colo.	Collision, head-end.	Passenger and switch engine.		10		*		1	do	8:54 p. m.	Crew of switch engine overlooked passenger train.
	18	Union Pacific	Gibbon, Nebr.	2 derailments	Freight and freight.		4	*			(6)1	do	1:20 p. m.	Welder allowed train to pass over facing-point switch in process of being built up by welding, derailed train fouling another train passing at the time.
	28	Grand Trunk Western	Fenton, Mich.	Collision, head-end.	Passenger and 3 switchers.	1	1			*	1	Cloudy	5:07 p. m.	Crew handling switchers overlooked passenger train.
	29	Atchison, Topeka & Santa Fe.	Enterprise, Kans.	Collision, rear-end.	Relief and freight.	1	6			*	1	Fog	7:08 a. m.	Failure of conductor and flagman properly to protect train.
Oct.	9	Delaware & Hudson	Scranton, Pa.	Derailment	Pay train	1	12	*			2	Clear	1:41 p. m.	Not definitely determined.
	14	Indiana Harbor Belt	Chicago Ridge, Ill.	Collision, rear-end.	Freight and freight.	1				(7)	2	do	10:59 p. m.	Failure of conductor and flagman properly to protect train.
	25	Chesapeake & Ohio	South Richmond, Ind.	Collision	Freight and yard engine.	1	2		*		1	Clear	1 p. m.	Failure of yard crew to provide flag protection and failure of freight train to be operated under proper control within yard limits.
	26	Southern Pacific	Montercy, Calif.	Collision, rear-end.	Passenger and freight.		3			*	1	do	5:03 p. m.	Failure of conductor and flagman properly to protect train.
Nov.	1	New York Central	National Junction, N. J.	Derailment	Transfer	1	2	*			(8)	Clear	12:10 a. m	Running off derail, crew not noticing switch improperly lined and then accepting signal indication which did not govern track to which they had been diverted.
	2	do	New Lexington, Ohio.	Collision, head-end.	Freight and light engine.	1	5		*		1	Cloudy	4 a. m.	Engineman overlooked superior train and disregarded signal at stop.
	16	Cleveland, Cincinnati, Chicago & St. Louis.	Worthington, Ohio.	Derailment	Passenger		13		*		1	Clear	3:30 a. m.	Broken rail.
	18	Western Maryland	Henry, W. Va.	Collision, rear-end.	Passenger and freight.		1			*	1	do	4:07 p. m.	Running on short time and failure of engineman properly to control speed after being flagged.
	23	Chesapeake & Ohio	Wayne, Ind.	do	Freight and freight.		1		*		1	Cloudy	7:30 a. m.	Failure of engineman to operate under proper control in occupied block and failure of conductor and flagman properly to protect train.
	29	New York, New Haven & Hartford.	Atlantic, Mass.	do	Passenger and passenger	1	207	*			4	Clear	8:24 a. m.	Failure of engineman properly to obey signal indications and stop signals of flagman.
	29	Louisville & Nashville	Woodrow, Tenn.	Derailment	Freight	3	7			*	1	do	9:45 p. m.	Broken rail.
Dec.	2	Atlantic Coast Line	Bennettsville, S. C.	do	Passenger	2	6			*	1	Smoky	6:05 p. m.	Open switch, probably due to unauthorized person in possession of switch key.
	3	Great Northern	Milan, Wash.	do	Freight	4	2	*			1	Clear	10 p. m.	Rock slide.
	6	Richmond, Fredericksburg & Potomac.	Cherry Hill, Va.	2 derailments	Freight and passenger.	2	14	*(9)			2	Rain	3:06 a. m.	Land slide.
	8	Chesapeake & Ohio	Hopetown, Ohio.	Derailment	Passenger	3	9		*		2	Cloudy	11.22 p. m	Excessive speed on sharp curve.

See footnotes at end of table.

Accidents investigated during the year ended June 30, 1934—Continued

Date	Name of road	Location of accident	Kind of accident	Kind of trains involved	Persons		Method of operation (indicated by *)			Number of main tracks	Condition of weather	Time	Causes
					Killed	Injured	Block system: Automatic	Block system: Nonautomatic	Train-order system				
1933													
Dec. 12	Southern	Hot Springs, N. C.	Derailment	Passenger	1	37	*(4)			1	Fog	7:32 p. m.	Excessive speed on sharp curve.
22	Chicago, Milwaukee, St. Paul & Pacific.	Java Junction, S. Dak.	Collision, head-end.	Passenger and passenger	2	52		*		1	Clear	6:35 p. m.	Failure of engineman properly to control speed approaching meeting point.
24	Chicago & Eastern Illinois and Southern.	Princeton, Ind	Collision, side	Passenger and transfer.		2			(10)	1	do	11:47 p. m.	Air hose on C. & E. I. train improperly coupled, resulting in brake system not being in proper operating condition.
26	Louisville & Nashville	Wadsworth, Ala	Derailment	Freight	1	7	*			1	do	11:52 a. m.	Pieces of wood on high rail of curve.
27	International-Great Northern.	Black Bridge, Tex.	do	do	5				*	1	Cloudy	12:10 a. m.	Cattle on track.
29	Atchison, Topeka & Santa Fe.	San Bernardino, Calif.	Collision, side	Passenger and equipment.		26				(11)	Hazy	12:12 a. m.	Engineman misinterpreted hand signal of switch tender.
31	Virginian	Hardy, Va	Derailment	Freight	2	1			*	1	Fog	6:27 a. m.	Rock slide.
1934													
Jan. 1	Chicago, St. Paul, Minneapolis & Omaha.	Omaha, Nebr	do	Passenger	3	1		*		1	Cloudy	12:34 p. m.	Motor truck driven upon crossing in front of approaching train.
3	St. Louis-San Francisco	Swift, Mo	Collision, head-end.	Freight and freight.		4			*	1	Clear	3:15 a. m.	Failure to obey wait order.
3	Pennsylvania	Deans, N.J	Collision	Passenger and motor truck.	2		*(1)			4	do	4:29 p. m.	Motor truck driven upon crossing in front of approaching train.
23	Northern Pacific	Arrow, Idaho	Derailment	Passenger	1	1			*	1	Cloudy	3:30 a. m.	Washout.
25	Reading	Blandon, Pa	do	do	2		*			2	Clear	6:25 p. m.	Automobile ran off highway at grade crossing and stalled across track.
Feb. 8	Chicago & North Western.	Monico, Wis	do	do	2	16			*	1	do	10 p. m.	Speed on curve too high for elevation provided.
9	Oregon Short Line	Woods Cross, Utah	Collision	Passenger and motor truck.	1	1	*			2	Cloudy	11:26 a. m.	Motor truck driven upon crossing in front of approaching train.
12	Norfolk Southern	Grimesland, N. C.	Collision, head-end.	Freight and freight.		2			*	1	Clear	6:32 p. m.	Failure to obey wait order.
13	Spokane, Portland & Seattle.	Carson, Wash	Collision, side	do		2			*	1	do	8:43 p. m.	Running on short time against opposing superior train.

	19	Chicago, Milwaukee, St. Paul & Pacific.	Wegdahl, Minn.	do	Passenger and passenger.		14		*		(12)	do	2:05 a. m.	Failure of engineman to stop at meeting point and ascertain way was clear.
	20	Long Island	Rockville Center, N. Y.	Derailment	Snow Plow	1		* (1)			2	Cloudy	3:20 p. m.	Snow and ice packed on highway grade crossing.
	21	New York Central	Weehawken, N. J.	do	Equipment	1					(13)	Clear	3:05 a. m.	Damaged switch, it having been run through by a previous movement.
	22	Chicago, Milwaukee, St. Paul & Pacific.	Iron Mountain, Mich.	do	Passenger		6		*		1	do	9:43 p. m.	Broken wheel.
	25	Bangor & Aroostook	State Road, Maine	do	Freight	1	2			*	1	do	4:00 p. m.	Deep hard-packed snow on one rail.
Feb.	26	Pennsylvania	Delphos, Ohio	do	Passenger	3	6	*			2	Cloudy	3:53 a. m.	Motor truck driven upon crossing in front of approaching train.
	26	do	Pittsburgh, Pa.	do	do	11	46	*(14)			4	do	9:32 p. m.	Excessive speed on sharp curve.
	28	Baltimore & Ohio	Sand Patch, Pa.	do	Freight	1		*			2	Clear	9:42 a. m.	Defective coupler yoke.
Mar.	4	do	Mount Airy, Md.	do	do				*		2	do	1:07 p. m.	Low coupler, draft gear apparently having been damaged when road engine slipped.
	6	Chicago, Milwaukee, St. Paul & Pacific.	Specchts Ferry, Iowa.	Collision, head-end.	Passenger and freight.	2	4		*		1	do	4:30 a. m.	Failure to obey meet order.
	8	Pennsylvania	Columbia City, Ind.	Collision, rear-end.	Freight and 2 light engines.		2	*			2	do	11:14 p. m.	Failure of engineman properly to observe and obey signal indications, also stop signals of flagman.
	10	Washington & Old Dominion.	Jackson, Va.	Collision, head-end.	Passenger and work.		12			*	1	Snow	1:45 p. m.	Running on short time.
	22	Pennsylvania	Earnest, Pa.	Collision, rear-end.	Transfer and engine pushing caboose.	3					(15)	Cloudy	9:55 p. m.	Failure of transfer to be protected either by flagman or marker.
	26	Chestnut Ridge	Delaware Avenue, Pa.	Derailment	Freight	1				*	1	Clear	5:35 a. m.	Cocked switch.
	27	Atchison, Topeka & Santa Fe.	Lynu, N. Mex.	Break-in-two	do		1	*			2	do	11:45 a. m.	Broken knuckle.
Apr.	3	Chicago, St. Paul, Minneapolis & Omaha.	Northline, Wis.	Derailment	Freight	3		*			2	Rain	2:45 a. m.	Washout.
	5	St. Louis-San Francisco.	Dora, Ala.	do	Passenger	1	2	*			1	Clear	3:05 p. m.	Bolt placed on high rail of curve.
	6	Northern Pacific	Big Lake, Wash.	do	do	1	2			*	1	do	11:20 a. m.	Uneven surface of track, coupled with speed and poor distribution of weight on tender trucks.
	19	Baltimore & Ohio and Pennsylvania.	Kylesburg, Ohio	Collision, head-end.	Freight and freight.	1	3	*(16)			3	do	5:45 p. m.	Operator failed to display train order signal and to deliver hold order, and then admitted train to block already pledged to and occupied by opposing train.
	24	Lehigh Valley	Bowmanstown, Pa.	Derailment	Freight	1	4	*(4)			2	do	2:48 a. m.	Excessive speed on sharp curve.
May	6	Lake Shore Electric	Clyde, Ohio	Collision	Freight and motor bus.	2	6			*	1	do	4:15 a. m.	Blow-out of front tire on bus caused it to swerve against electric freight train.
	19	Chicago River and Indiana.	Chicago, Ill.	Derailment	Yard transfer	2	2				(3)	do	12:35 p. m.	Insecure track, section foreman not protecting tie-renewal work.
	20	Norfolk & Western	Nace, Va.	do	Freight	1	1	*(1)			1	do	2:50 p. m.	Cause not definitely determined.
	22	Virginian	Cirtsville, W. Va.	Collision, head-end.	Freight and freight.	2	1			*	1	Cloudy	4:27 p. m.	Failure to obey meet order.
June	6	Pennsylvania	Graystone, Md.	Derailment	Passenger	3		*(1)			2	Clear	8:18 p. m.	Excessive speed on sharp curve.

See footnotes at end of table.

Accidents investigated during the year ended June 30, 1934—Continued

Date	Name of road	Location of accident	Kind of accident	Kind of trains involved	Persons		Method of operation (indicated by *)			Number of main tracks	Condition of weather	Time	Causes
					Killed	Injured	Block system: Automatic	Block system: Nonautomatic	Train-order system				
1934													
June 11	Chicago, Rock Island & Pacific.	Pacific Junction, Okla.	Collision, side	Passenger and freight.	1	---	----	----	*	1	Cloudy	11:29 p. m.	Failure of conductor properly to control speed of back-up movement.
26	Elgin, Joliet & Eastern	Indiana Harbor, Ind.	Derailment	Freight	1	2	----	----	(7)	2	Clear	6:30 p. m.	Cocked switch.
30	New York, New Haven & Hartford.	Fall River, Mass.	Collision, head-end.	Passenger and empty equipment.	---	13	----	*	----	1	---do	1:10 p. m.	Failure of empty equipment to be moved from station on designated track, and failure of both enginemen to operate under proper control within yard limits.

[1] Supplemented by cab-signal system.
[2] Each railroad a single-track line with no block-signal system.
[3] Centralized traffic control and automatic train stop.
[4] Supplemented by automatic train stop.
[5] Yard.
[6] Engine involved in first derailment fouled freight train passing on double-track line.
[7] Trains operated by book of rules and special instructions.
[8] Interchange tracks operated as double track.
[9] Supplemented by 2-speed continuous control and cab signals.
[10] Automatic signals on Chicago & Eastern Illinois; manual block on Southern.
[11] Accident occurred at entrance to station where switch tender's signals governed.
[12] Accident occurred at switch at end of double track.
[13] Accident occurred in yard leading to station.
[14] Controlled manual block with automatic signals for spacing following movements.
[15] Accident occurred on over yard tracks which trains were operated by operating rules and special instructions.
[16] Pennsylvania engines equipped with cab signals, but engine involved, operating backward, not equipped for that type of operation: B. & O. train moving against current of traffic under mannual block.

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